



Paleosols in Jordan as indicators for the timing and character of environmental change

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It is often assumed that global warming may aggravate desertification, but that a reduction of human pressure can compensate for the increased climatic forcing. In this context, paleosols in Jordan inform us that past landscapes changed during comparatively short periods of instability. These were characterized by the frequent occurrence of heavy precipitation events which led to landslides and catastrophic flooding. Despite intensive land use since the beginnings of agriculture, there is so far no indication that human activity was related to these instabilities. On a macro-scale, the distribution of soils and sediments is determined by the geology, relief, and climate zone. On a micro-scale, the main processes leading to soil degradation and landscape change are calcification and erosion in form of landslides. Comparing soils developed on different source rocks, and paleosols dating to different periods, an overall trend of decreasing soil maturity over the Holocene can be observed. It seems that paleosols in Jordan were often not recognized as such, since many colluvia do not allow visual distinction of buried surfaces. However, the combination of soil magnetics, development indices based on iron and manganese oxides, thin sections, and determination of calcium carbonate contents make it possible to decipher the stratigraphy of colluvia in Jordan.